



APEC Expert Group on Clean Fossil Energy (EGCFE) Oil and Gas Meeting

APEC Gas Market Report 2018

Diego RIVERA RIVOTA
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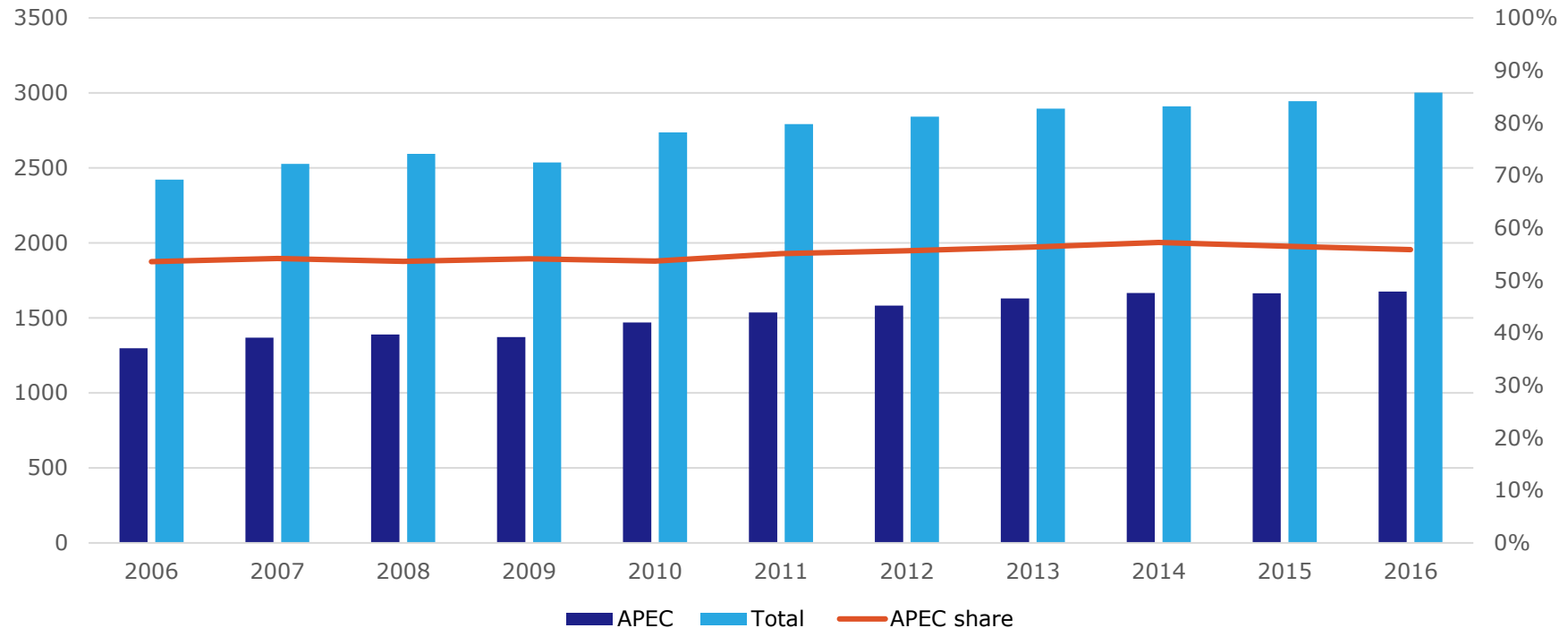


About the Report and its Structure

- First edition of these reports, the other two: coal and oil.
- Structure:
 - Executive summary
 - Section 1: Gas Demand
 - Section 2: Gas Supply
 - Section 3: Gas Trade
 - Section 4: Gas Prices
 - Section 5: Case study on US gas exports to Mexico and Mexico's gas market reform

World and APEC Demand for natural gas

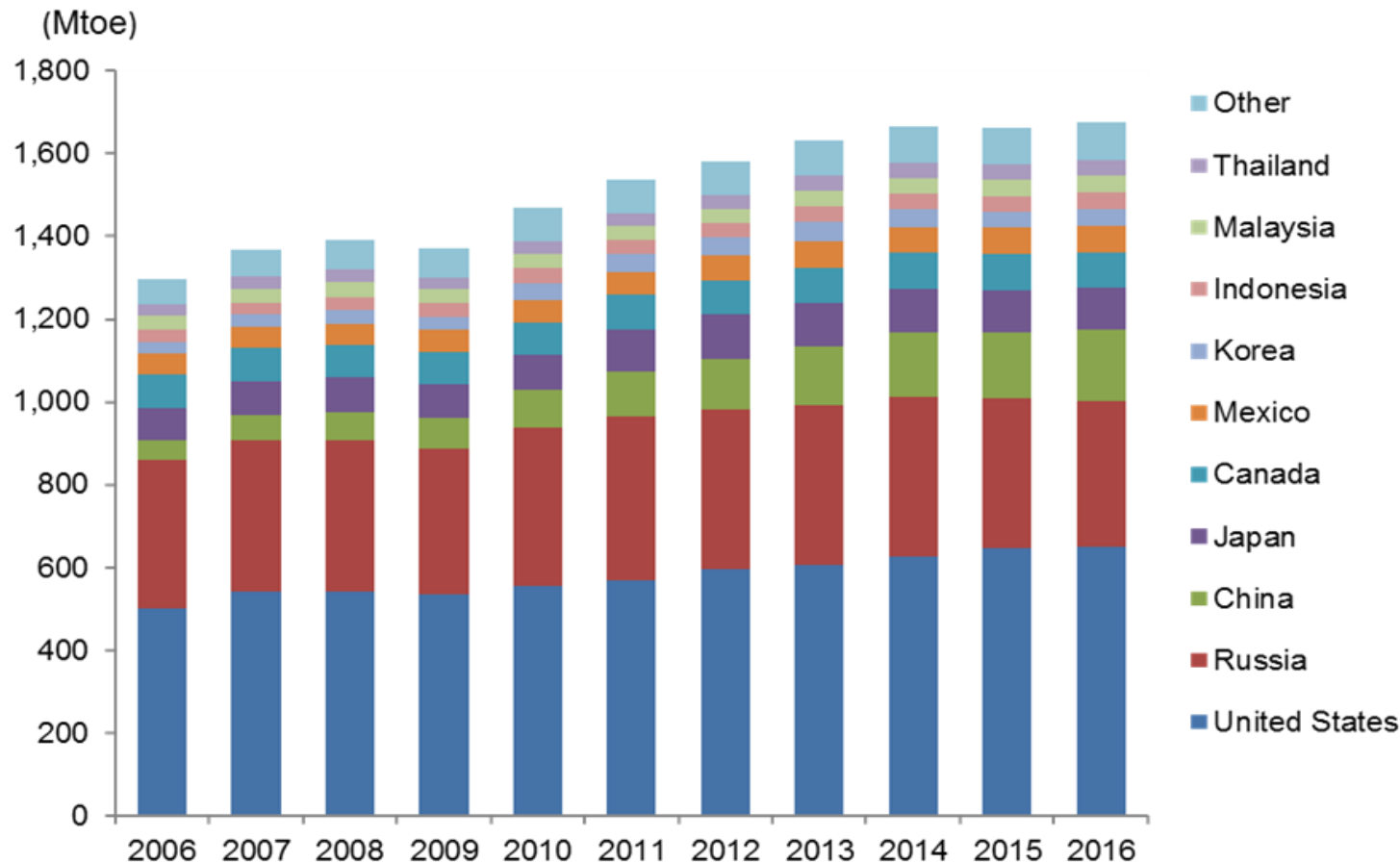
World and APEC Demand for natural gas, 2006-2016 (Mtoe, %)



- *World gas demand has grown by 2.2% on average in the past 10 years.*
- *APEC gas consumption has grown faster, by 2.6% per year on average.*
- *Around 60% of global gas consumption takes place in APEC member economies. In 2006 it was 53%.*

Sources: International Energy Agency (IEA), World Energy Balances 2017; Asia Pacific Energy Research Centre, Energy Balance Table

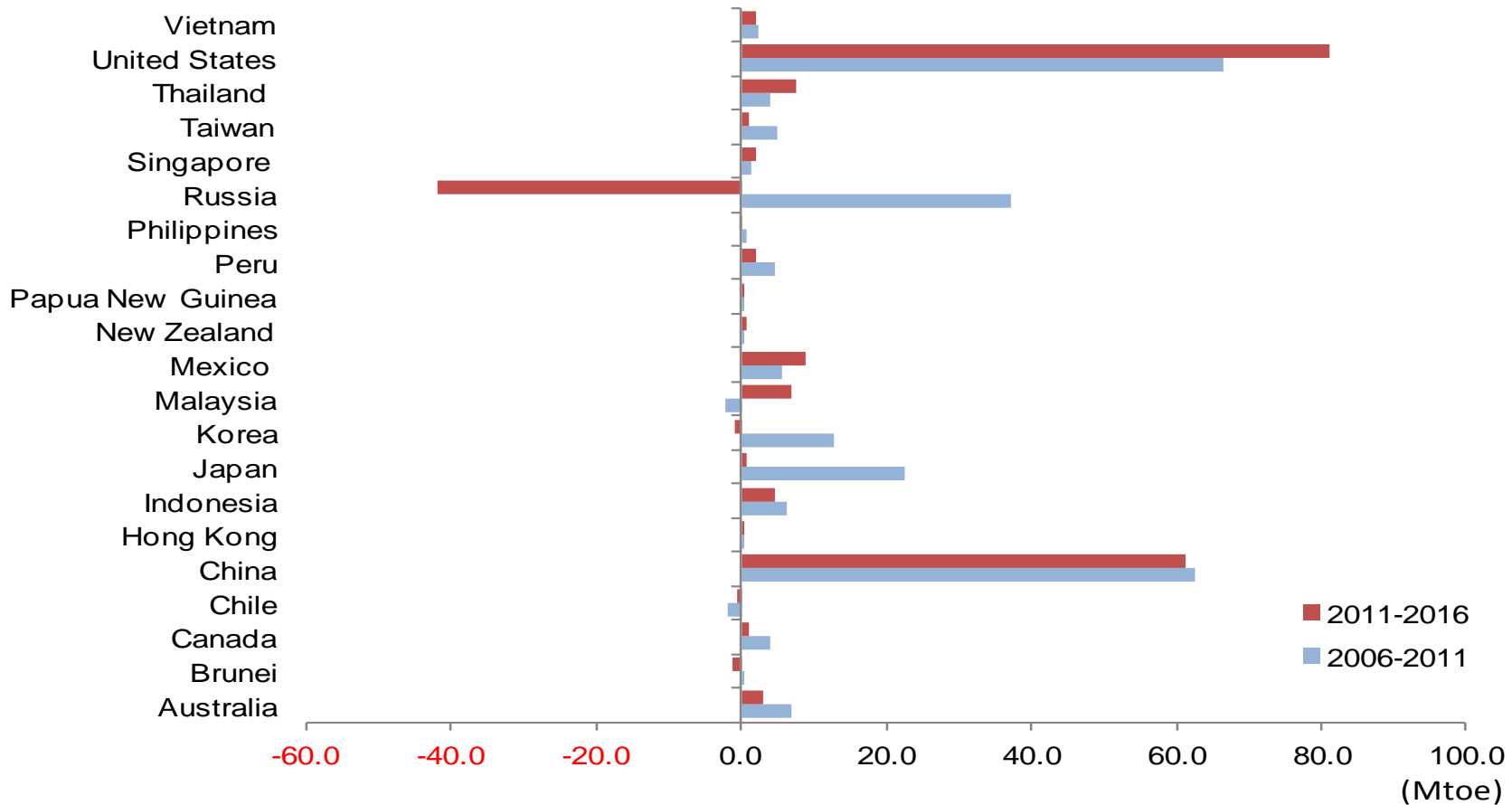
Gas consumption in the APEC region



- *The US remains the main gas consumer in the world.*
- *Russia remained stable in consumption, while China and Japan surpassed Canada.*
- *Analysis on the largest four consumers plus Korea.*

Sources: IEA, World Energy Balances 2017

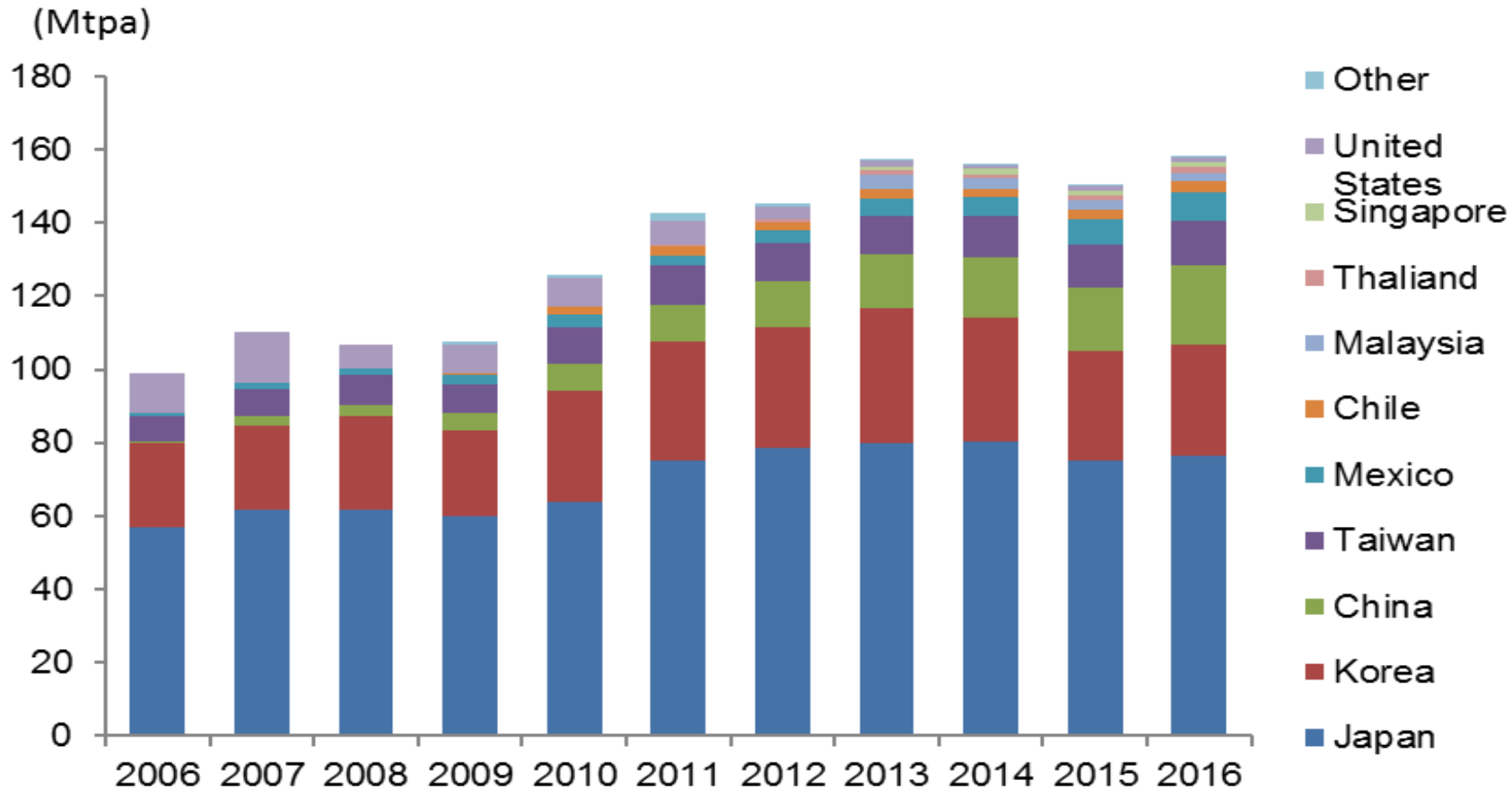
Changes in gas consumption in the APEC region, 2006-2016



- *China and the US are the largest contributors to the APEC region demand growth.*
- *China grew by 264%, 124 Mtoe.*
- *The US by 29%, 148 Mtoe.*

Sources: IEA, World Energy Balances 2017

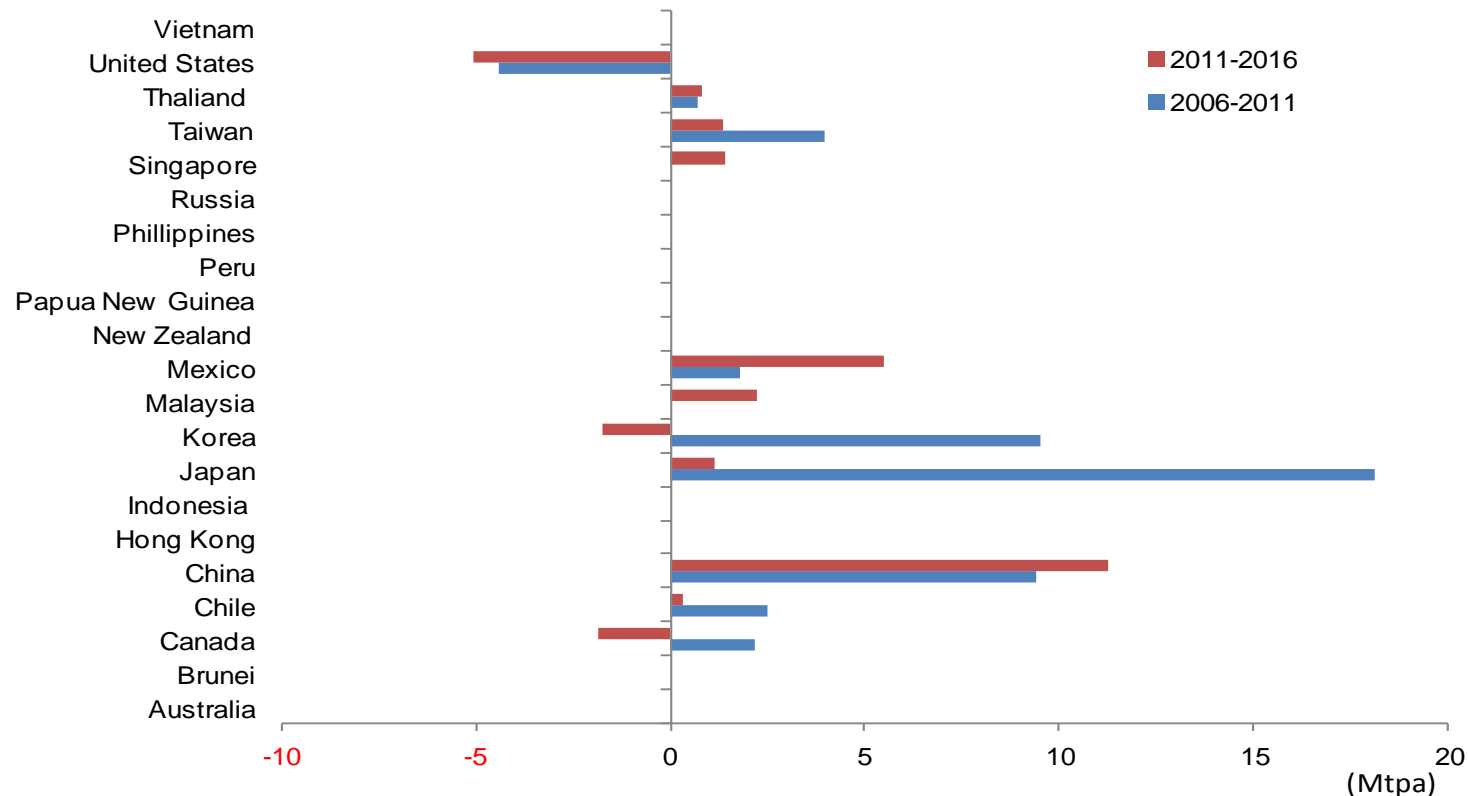
APEC member economies LNG imports, 2006-2013



- *World LNG demand has grown by 5.4% on average in the past 10 years.*
- *However, APEC LNG imports grew by 2.6% per year on average, around 60 Mtpa.*
- *Despite this, APEC LNG demand represented 71% of world imports.*

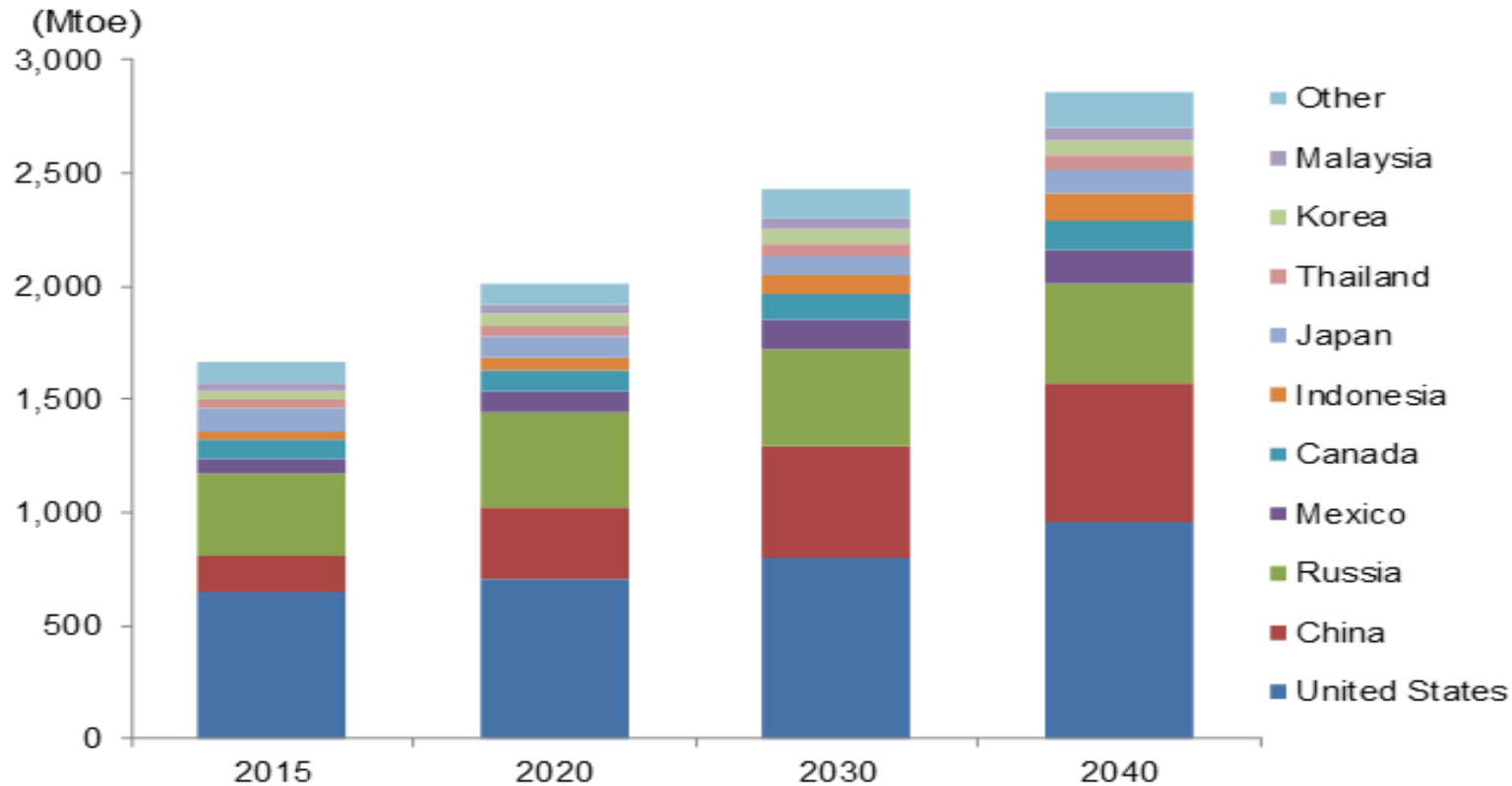
Sources: IEA, World Energy Balances 2017

Change in APEC LNG imports (2006-2016)



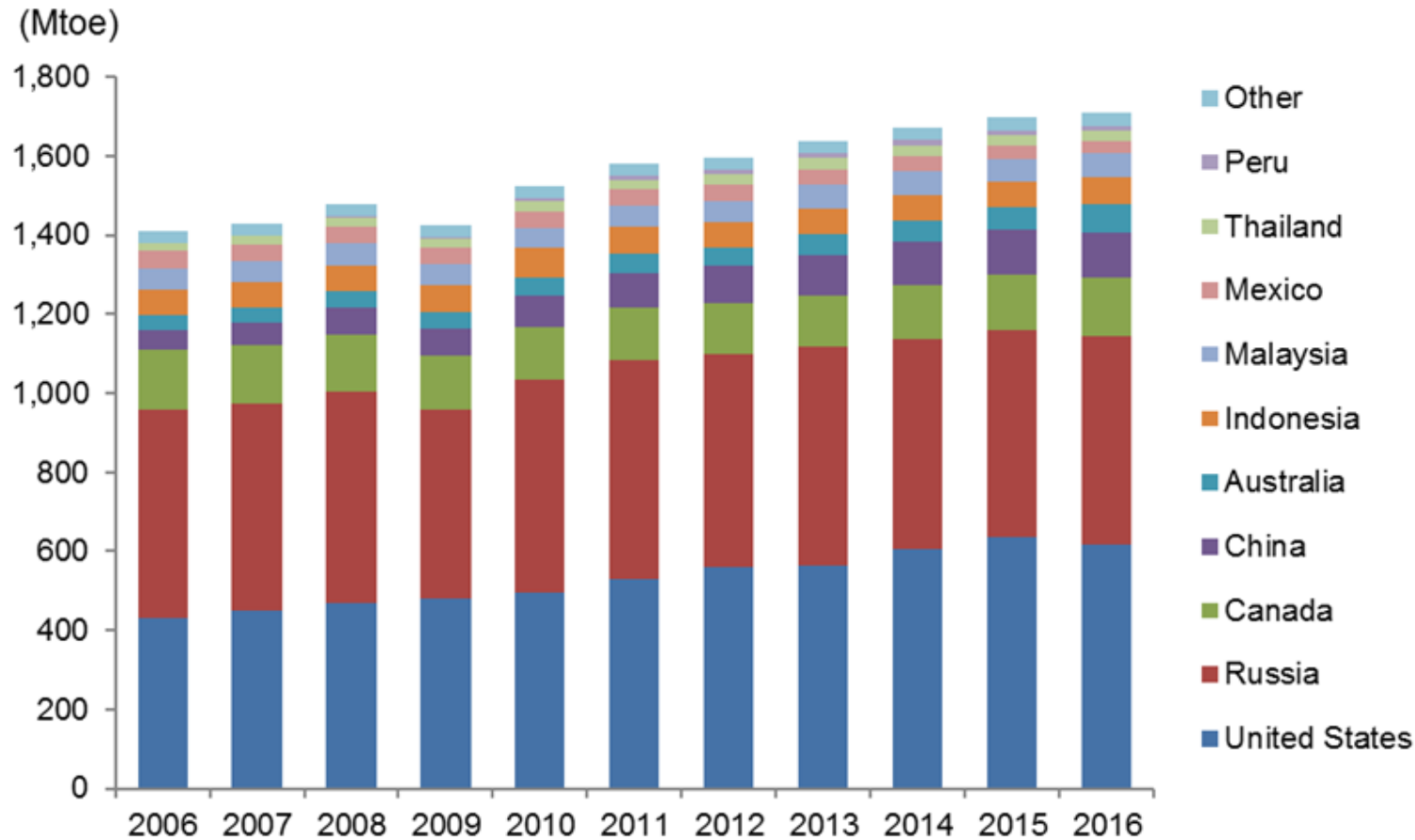
- *China was also the largest contributor to the APEC region LNG demand growth.*
- *China's LNG demand grew by 2000%, roughly 20 Mtpa.*
- *Japan was already the largest LNG importer it grew 19 Mtpa.*
- *Korea and Mexico grew by a similar proportion, around 8 Mtpa each.*
- *US imports shrank massively by 20 Mtpa.*

Outlook for natural gas consumption in APEC, 2015-2040



- *Worldwide natural gas consumption will increase by an average 1.8% per year, growing from 2,944 Mtoe in 2015 to 4,550 Mtoe in 2040.*
- *APEC gas demand will increase by an average 2.2% per year from 1,663 to 2,854 Mtoe during the same period.*
- *US and China will be the main drivers of consumption growth in the region.*

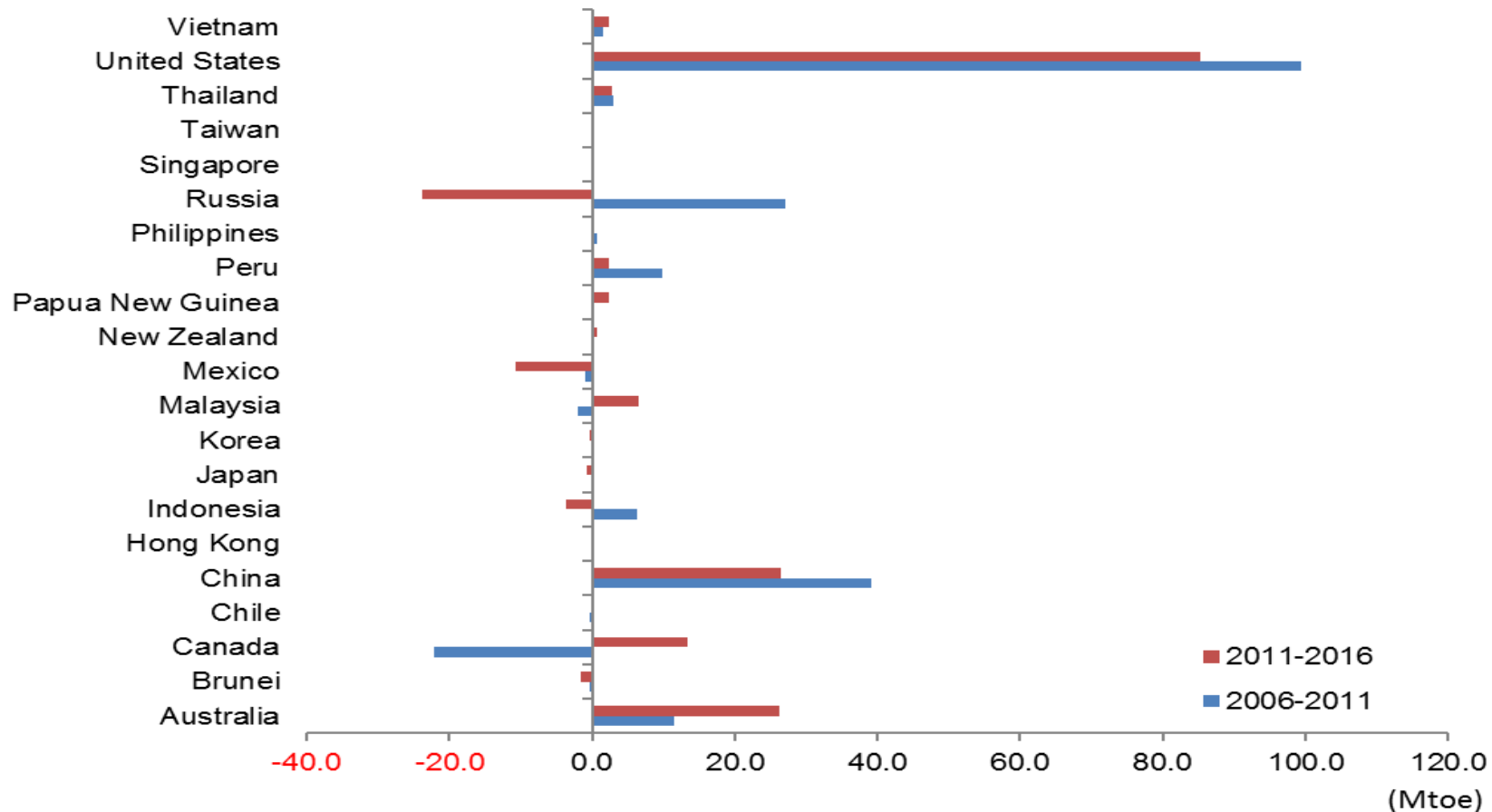
Gas supply in the APEC region



- *APEC production remained stable at around 57% of world's production.*
- *US surpassed Russia in 2012 as the world's largest producer (shale revolution).*
- *Analysis on the five largest producers.*

Sources: IEA, World Energy Balances 2017

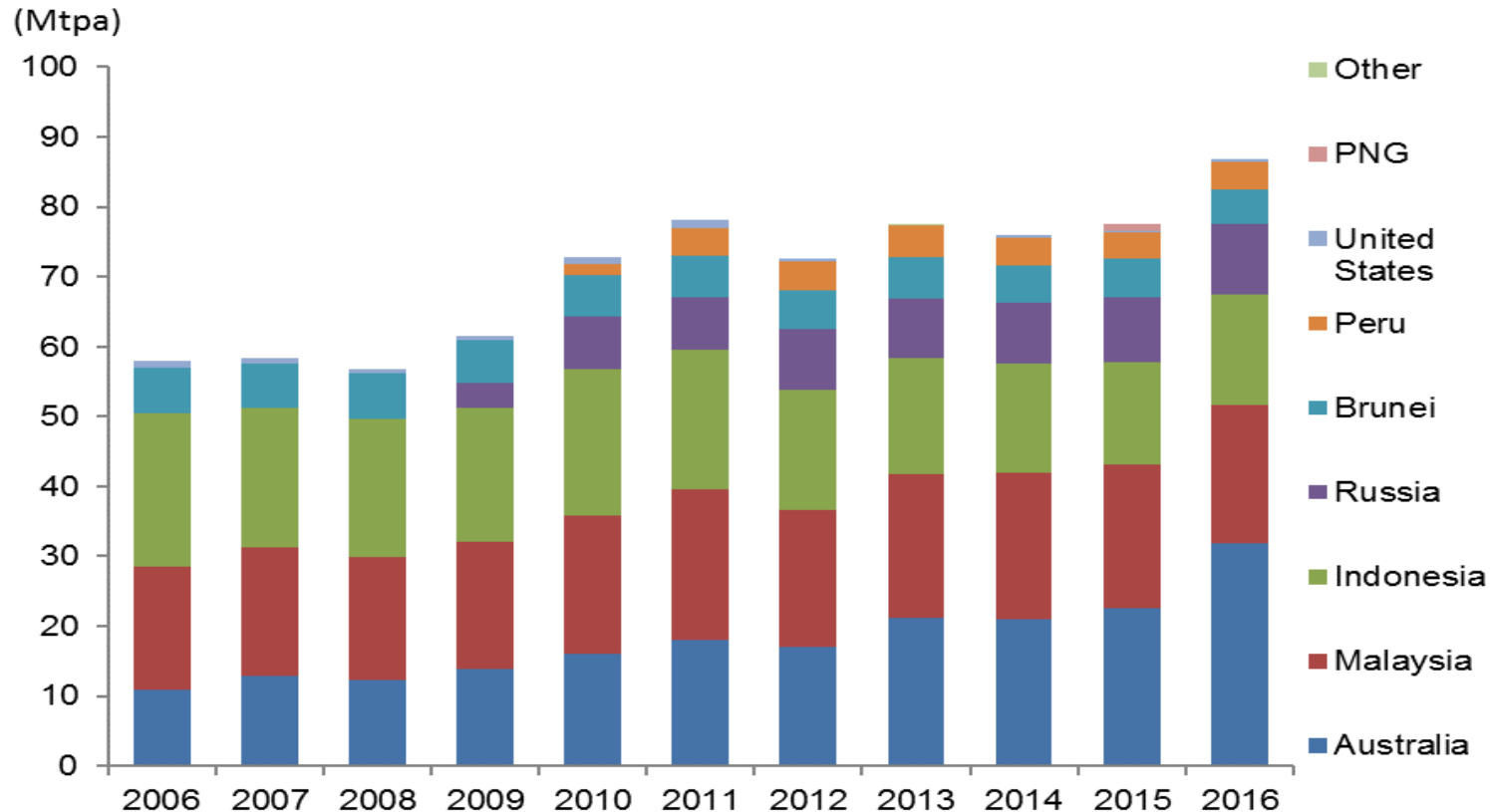
Changes in gas supply in the APEC region, 2006-2016



- *The US and China are the largest contributors to the APEC region production growth.*
- *The US grew by 43%, 184 Mtoe; China by 135%, 66 Mtoe.*
- *Conversely, Mexico's production shrank by 28%, around 12 Mtoe.*

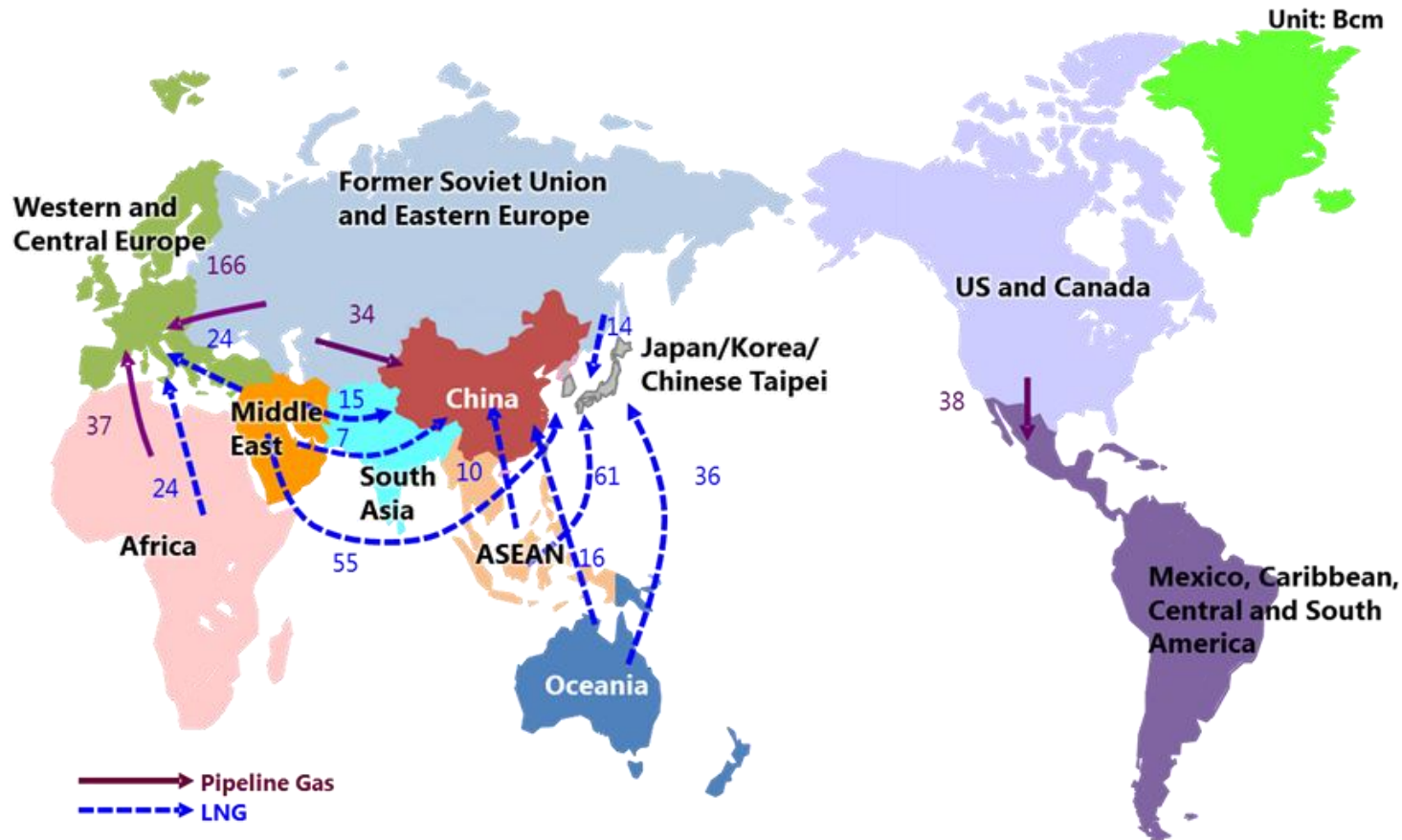
Sources: IEA, World Energy Balances 2017

APEC member economies LNG exports, 2006-2013



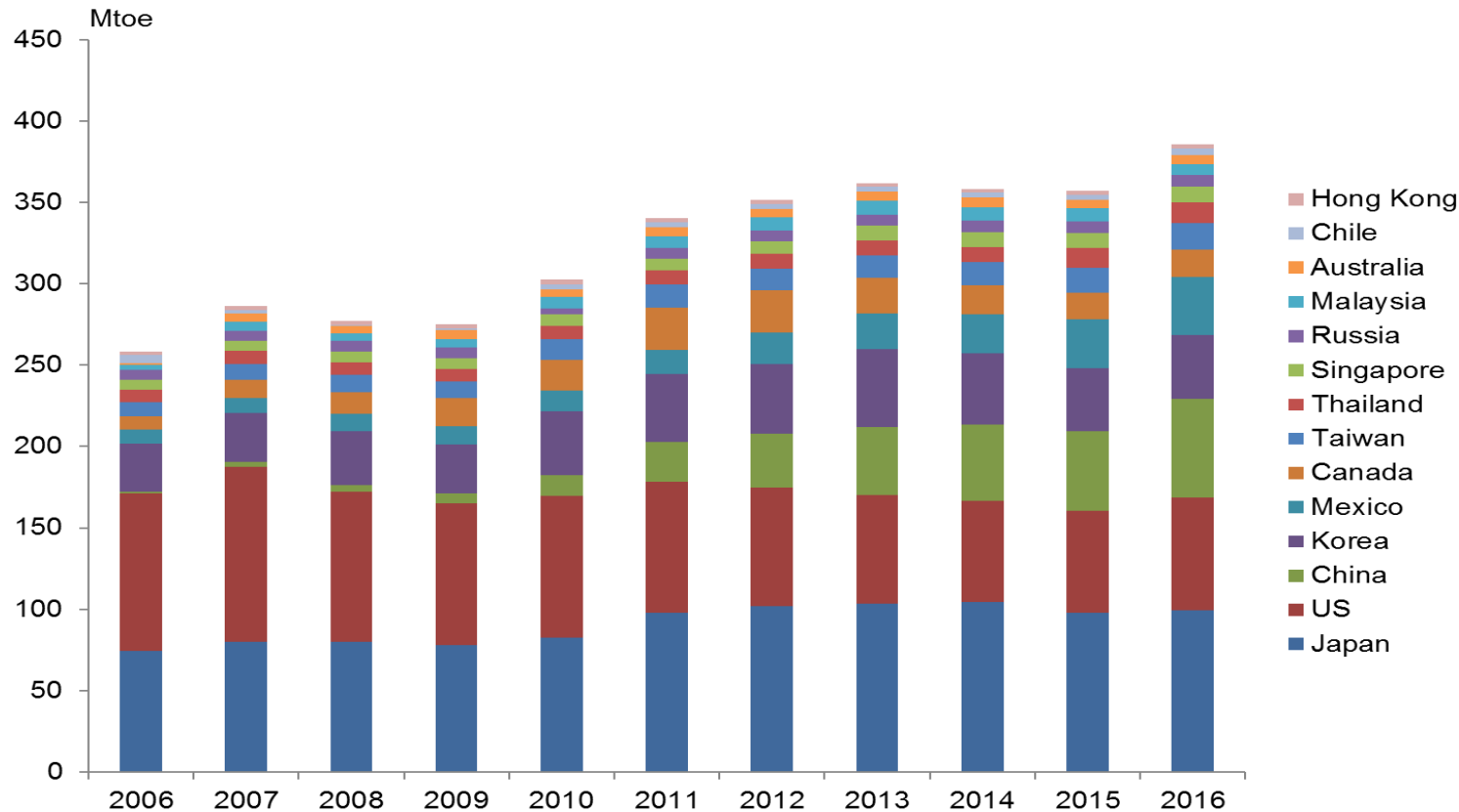
- *World LNG supply has grown by 5.6%, oversupplying the market.*
- *Despite increasing production, APEC LNG exports decreased from 45% of the world's exports to 39%.*
- *Australia and Russia contributed 31 Mtpa of exports, almost all the APEC growth.*
- *High expectation for US LNG exports growth.*

Major natural gas trade flows, 2016



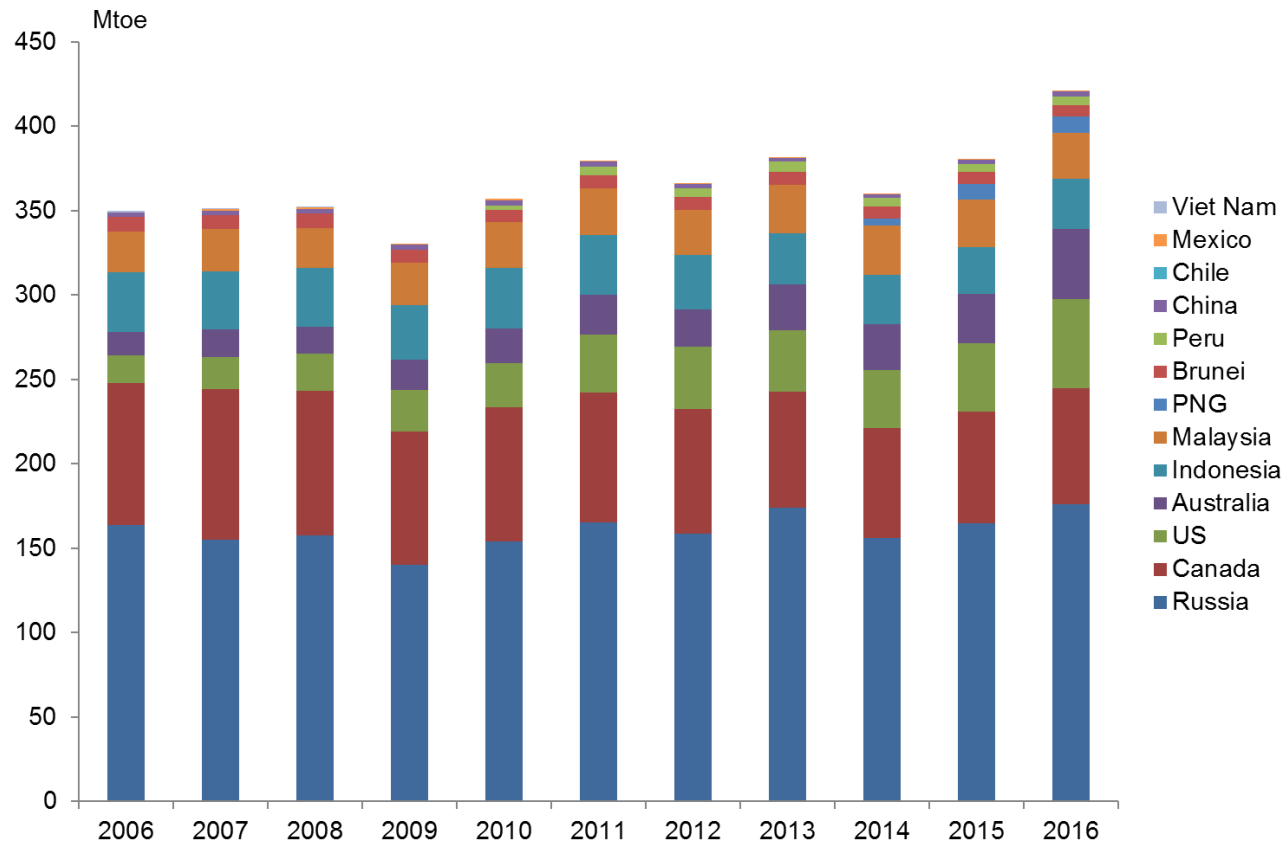
- World gas imports grew by 2.1% per year from 889 bcm in 2006 to 1,098 bcm in 2016.
- APEC members' share of global natural gas imports increased from 35% to 43% in the last decade.
- Only 3 out of 21 APEC members do not trade gas: NZ, VN and PH.

APEC member gas imports, 2006-2013



- *Japan remains the largest LNG and natural gas importer in the world.*
- *While US imports decreased, it still is the second biggest importer.*
- *Biggest growth in imports in the APEC region, China.*
- *Mexico's imports growing fast will probably surpass Korea in the coming years.*

APEC member gas exports, 2006-2013



- APEC's share of global natural gas exports declined from 48% in 2006, to 46% in 2016.
- Russia remains the world's largest gas exporter and added its Yamal LNG in 2017 and is building a pipeline to China. Uncertainty on future of Russian exports.
- Canada still exports massive volumes to the US, but they decreased by 18% during the last decade.
- The US more than tripled natural gas exports including pipeline deliveries and LNG exports.
- Australia nearly tripled its LNG exports during the same period..

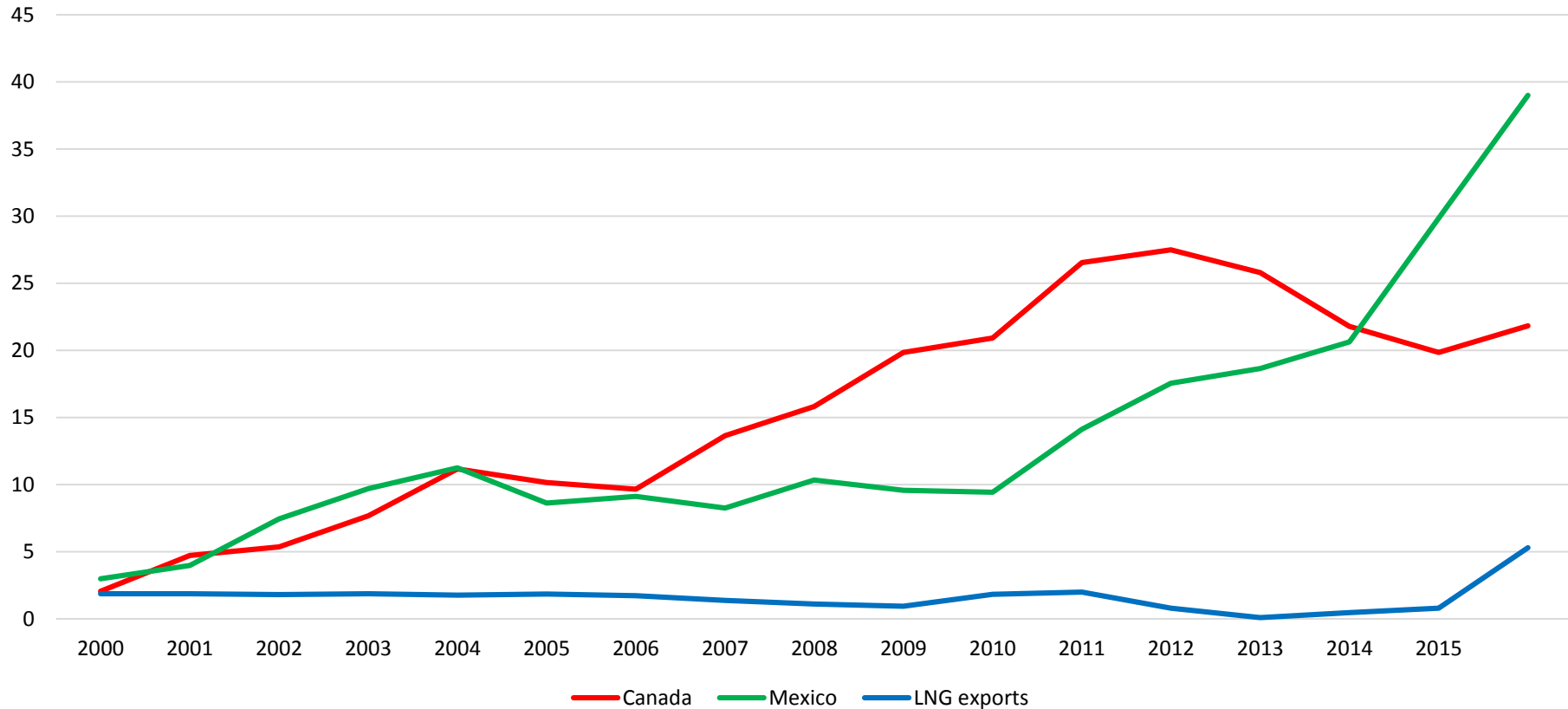
Future outlook

- Possible upward trend in **Asian LNG** prices long-term contracts are linked to crude **oil** prices which are expected to gradually **rise** in the future.
- However, this may not happen as importing companies will want to **renew contracts** at lower prices, and some companies will opt for short-term lower prices or **spot** contracts.
- Despite LNG demand growth, pushed mainly by China, LNG markets will continue to be **oversupplied** with new capacity additions. Because of this, the **Asian LNG spot** price is forecasted to stay at or **below \$6/MMBtu**, increasing the gap with long-term contract prices.
- Gas price in **Europe** have a mixed future. In the short run, prices will have a **downward tendency** because of slow demand growth and intensified **competition** among exporters. In the mid-term, however, the North Sea's production decline and demand for power generation will pressure natural gas prices in Europe, and they will recover to the level of **\$7/MMBtu** at around 2020.
- Gas price in the **United States** are expected to be lower in the near future. On the other hand, the recovery of the oil price might raise development and production costs. The start of LNG exports on the US Gulf Coast may also add upward pressure on the domestic prices, but prices are expected to remain below **\$4/MMBtu** in the mid-term.

Case study: US gas exports to Mexico and MX gas market reform

- Why US gas exports to Mexico?
- LNG exports vs piped exports?
- Almost a decade after the “US shale revolution.” In spite of a domestic consumption increase, solid growth on gas exports.
- The main destination of US gas exports is Mexico.
- In 2013, Mexico started an ambitious energy reform plan to transition from vertically integrated monopolies run by state owned companies (Pemex and CFE) to a free market.
- Mexico’s natural gas market is in its infancy but has a growing demand driven by an oil-to-gas fuel switch in power generation.

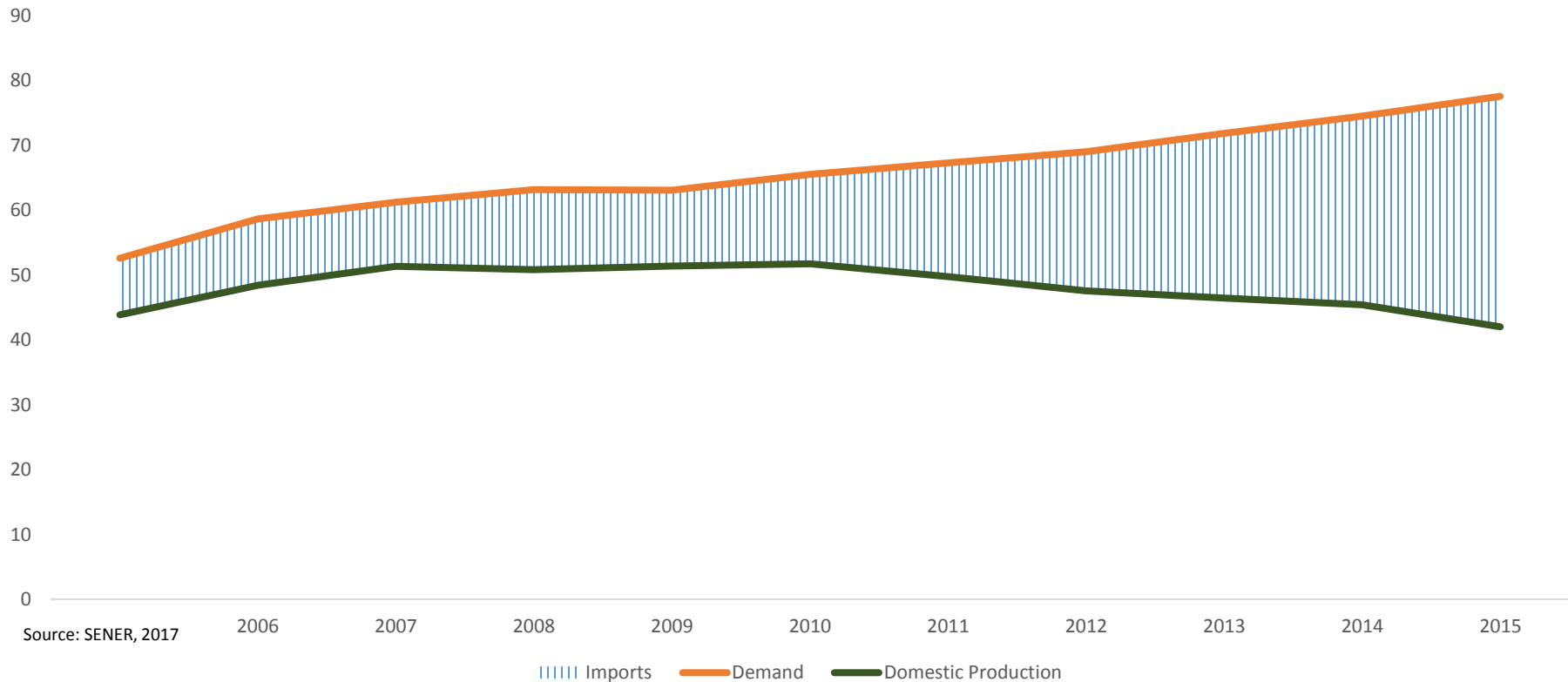
US gas exports (2000-2016, bcm)



- *US gas exports have been rising since 2006.*
- *Mexican US imports more than doubled in the last three years.*
- *In 2016, US piped imports to Mexico reached 38 bcm, the same volume of total China piped imports.*

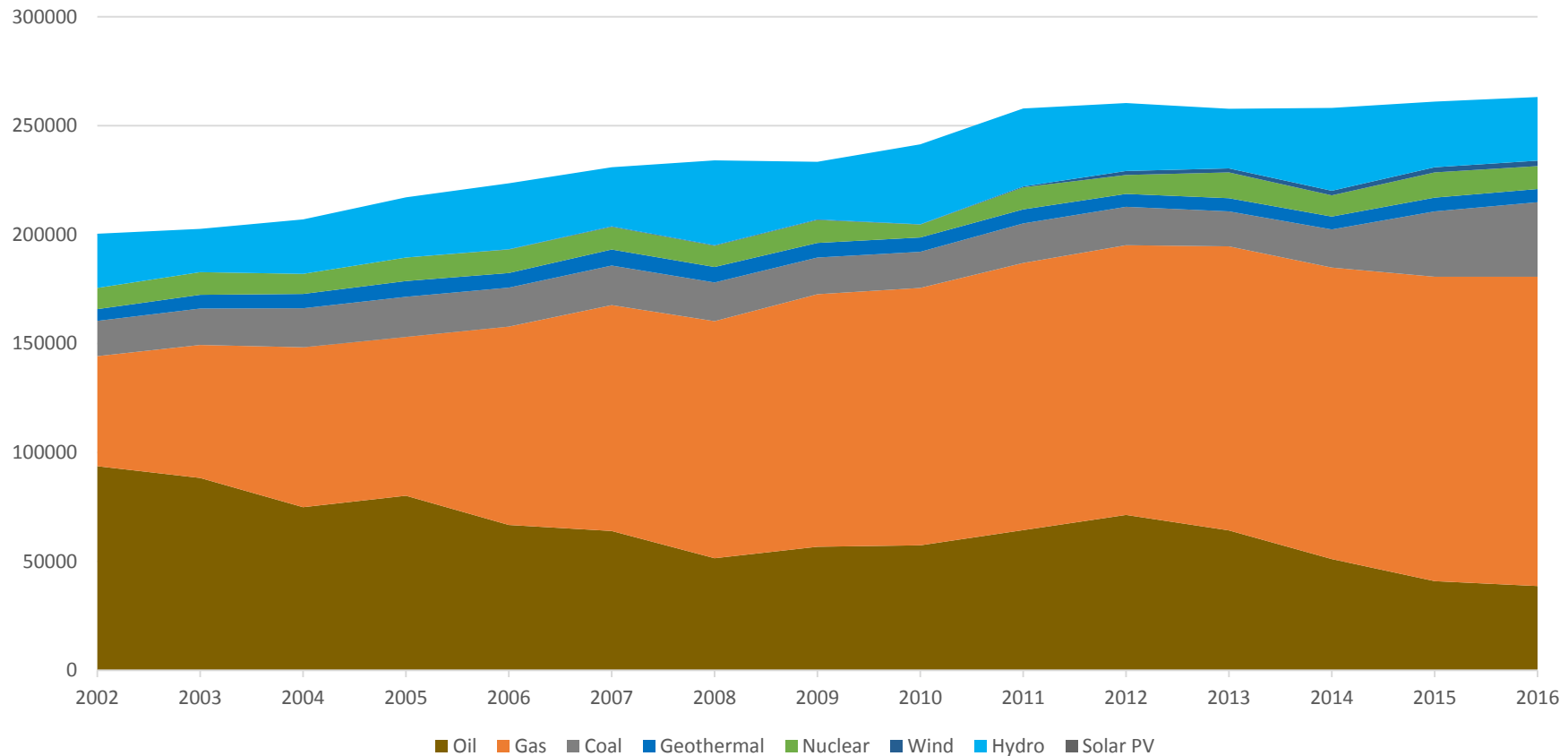
Sources: US EIA, 2017

Mexico's Gas Demand and Supply (2005-2015, bcm)



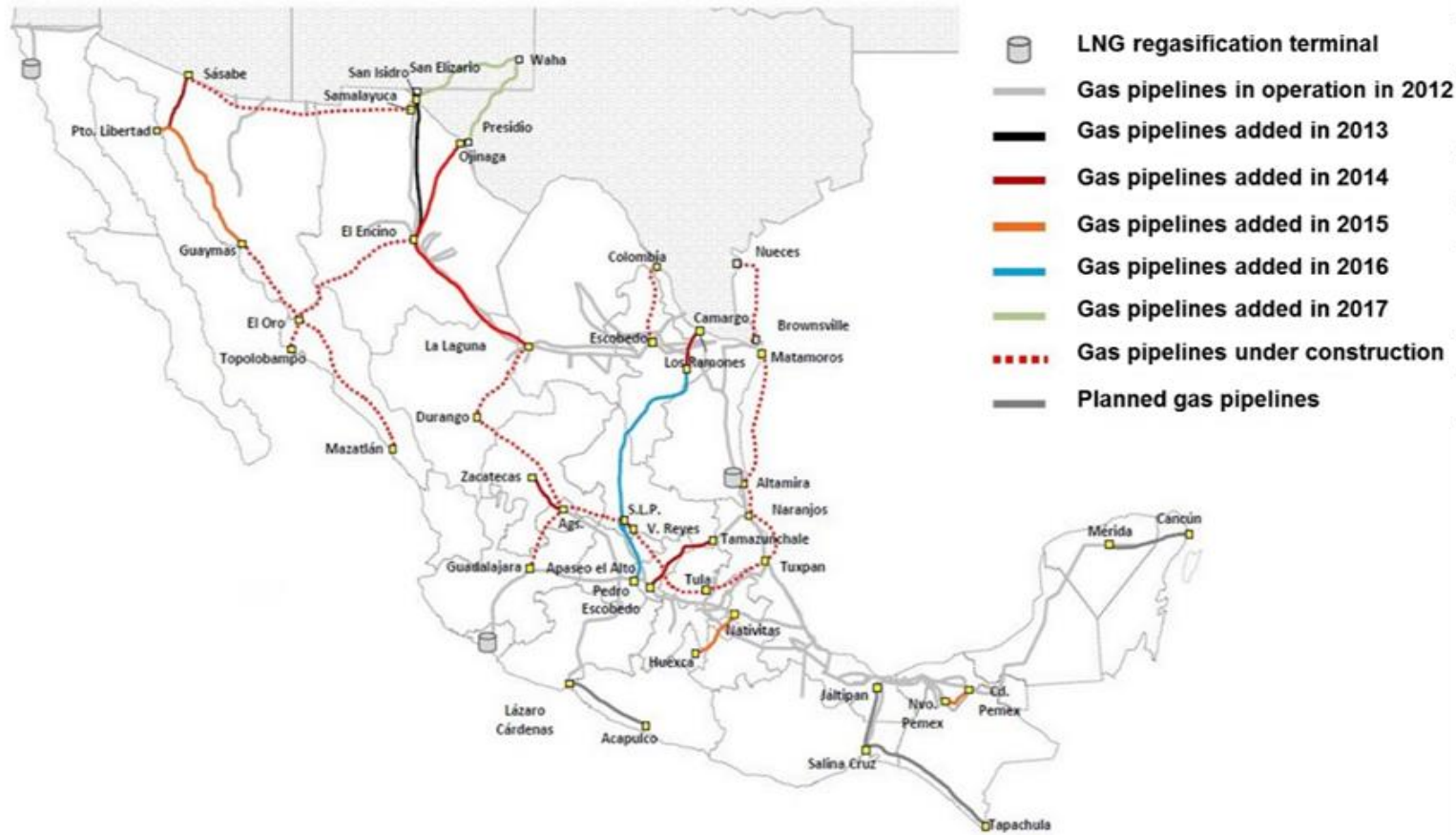
- *1999, Mexico's net gas imports were close to zero. Natural gas demand has grown since 2000 by an annual average rate of 5%, reaching almost 80 bcm in 2016.*
- *Since 2010, production has been decreasing each year, plummeting from 52 to 36 bcm in 2016.*
- *Why? 1) most production, associated; 2) monopoly; 3) Pemex preferred investing in oil.*

Power generation in Mexico by fuel type (2002-2016, MWh)



- *By 2002, Mexico's power generation used predominantly oil (47%) and gas (25%).*
- *CFE, then state-owned monopoly, almost doubled its gas-fired power generation capacity versus and effective generation switched to gas accounting for 45% and oil for 28%. Price differential: WTI vs Henry Hub.*

Mexico's gas transport network and its additions since 2012



- The 2013 Energy Reform triggered a massive transformation from Pemex and CFE's monopolies to open markets.
- Gas demand expected to grow by 2.6% up to 92 BCM by 2023 and domestic production expected to peak around 40 BCM.
- Mexico's gas imports will continue growing, creating a promising market for US gas producers.

US gas exports to Mexico in a global perspective...

- US gas exports to Mexico in 2016 totalled 40 bcm,
 - Larger than all piped gas imported by China
 - Equivalent to Indonesia's total gas demand
 - Nigeria's whole gas production.
- When compared with LNG market volumes, as big as all Korean LNG imports in 2016 or, put it alternatively or Algerian LNG exports.
- In comparison , the IEA expects the US to export around 80 BCM in the LNG markets by 2022 vs 40-56 BCM to Mexico.
- Mexico's nascent gas market has a promising future for US gas producers and exporters, Mexican power companies and industry, and consumers.
- With declining domestic production, US gas imports to Mexico have more than quadrupled in less than 10 years.



But challenges coming ahead...

- Transition from a state-owned monopolistic scheme to the creation of a competitive gas market is full of challenges.
- Biggest one, delays in the construction of the new pipelines that are supposed to take imported gas to consumption centres in Mexico. At least six projects have delayed commercial operation for more than a year, because of rights-of-way disputes or social protests.
- Effective regulation
- Price indexation controversies
- Lack of storage capacity
- Increased dependency from US gas market,
- Competition from low-priced renewable power generation
- The Trump effect..
- They all have raised concerns from several stakeholders in both Mexico and the US.
- However, the extremely competitive US shale gas production and Mexico's gas market reform are promising signs for strengthening and increasing this bilateral market, one of the biggest in the world. .





Thank you for your attention!

diego.rivera@aperc.ieej.or.jp

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